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NAME [REDACTED]

ANATOMY EXAMINATION
NOVEMBER 1988

SELECT THE BEST ANSWER

1. The spermatozoa are stored in the:

- E. ☒ E. tail of epididymis and beginning of ductus deferens
☐ A. seminal vesicle and termination of ejaculatory ducts
☐ B. testis and head of epididymis
☐ C. ampulla of ductus deferens and urethra prostatica
☐ D. superficial pouch

2. Semen is a product of the testes mixed with secretions from:

- Gen. Ure. Prost. E. ☒ E. seminal vesicles, prostate and bulbourethral gland
☐ A. seminal vesicles, prostate and bladder
☐ B. prostate, urethra and deferens
☐ C. seminal vesicles and glans penis or clitoris
☐ D. prostate, colliculus seminalis and bulbourethral glands

3. The orifices on the colliculus seminalis at either side of the prostatic utricle belong to:

- D. ☒ D. the ejaculatory ducts
☐ A. the vestibular canals
☐ B. the urethral lacunae
☐ C. the ductus deferentes
☐ E. the seminal ducts

4. The muscles of the male urogenital diaphragm are:

- C. ☒ C. deep transverse perineus and sphincter urethrae muscles
☐ A. superficial transverse perineus muscle and sphincter urethrae muscle
☐ B. deep and superficial transverse perineus muscles
☐ D. sphincter urethrae and sphincter prostate
☐ E. sphincter urethrae and sphincter trigoni vesical

5. The muscle, which overlies the bulb of the penis is the:

- A. suspensory of the penis
- B. fundiform
- C. pudendal longitudinal cavernosus
- D. bulbospongiosus
- E. ischiocavernosus

6. The regions of the perineum are:

- A. lumbar and pubic
- B. sacral and lumbar
- C. anal and coccygeal
- D. anal and urogenital
- E. urogenital and ischial

7. The morphological equivalent of the penis is:

- A. the vestibule of the vagina
- B. the hymen
- C. the clitoris
- D. the vestibular gland
- E. the vulva

8. The ischiorectal fossae are:

- A. the wings of the uterus
- B. the fimbriae of the ovary and sphincters of the oviducts or uterine tubes
- C. spaces at either side of the anal canal, inferior to the pelvic diaphragm
- D. spaces containing fat to accommodate the broad ligaments of the uterus
- E. the lateral depressions on each ischial tuberosity as they relate to the rectum

9. The major external female genital organs are:

- A. labia majora, labia minora, mons pubis, clitoris, bulb of the vestibule, and greater vestibular glands
- B. labia majora, mons pubis, clitoris, cervix uteri, and vestibule (bulb and glands)
- C. labia majora and minora, mons pubis, clitoris, cervix uteri, vestibular bulb and glands
- D. mons pubis, labia, clitoris, fimbria ovarica, vestibular bulb and greater vestibular glands
- E. labia majora, mons pubis, urethra, vestibule, clitoris

10. The muscle covering the crura of the clitoris or penis is the:

- A. sacrocavernosus
- B. iliocavernosus
- C. pubocavernosus
- ☒ D. ischiocavernosus
- E. ischiospongiosus

11. The ligament which surrounds the bare area of the liver is named:

- A. Falciform ligament
- ☒ B. Coronary ligament
- C. Ligamentum teres
- D. A and B are correct
- E. A, B and C are correct

12. The most anterior structure(s) inside the hepatoduodenal ligament is (are)

- A. Hepatic artery
- B. Portal vein
- C. Bile duct
- D. A and B are correct
- ☒ E. A and C are correct

13. Why is the gastrosplenic ligament also considered as an omentum?

- ☒ A. because it is the continuation of the greater omentum to the left
- ~~B.~~ because it includes the short gastric vessels
- C. because one of its attachment is on the stomach
- ~~D.~~ A and B are correct
- E. A and C are correct

14. The right gonadal vein drains into:

- ☒ A. inferior vena cava
- ~~B.~~ right common iliac vein
- ~~C.~~ left renal vein
- D. right renal vein
- ~~E.~~ azygos vein

15. The inferior pancreaticoduodenal artery is a branch of:

- A. gastroduodenal artery
- B. splenic artery
- C. inferior mesenteric artery
- D. middle colic artery
- E. superior mesenteric artery

16. The inferior limit of the epiploic foramen is determined by:

- A. inferior vena cava
- B. caudate lobe of the liver
- C. first portion of duodenum
- D. A and B are correct
- E. A and C are correct

17. Which structure forms the floor of the lesser sac?

- A. Mesentery
- B. Lienorenal ligament
- C. Pancreas covered by posterior parietal peritoneum
- D. transverse Mesocolon
- E. Lesser omentum

18. Which sequence best represents the course taken by spermatozoa from the site of origin to the exterior?

- A. seminiferous tubules, efferent ducts, epididymis, ductus deferens, urethra, ejaculatory ducts
- B. seminiferous tubules, efferent ducts, epididymis, ductus deferens, ejaculatory duct, urethra
- C. seminiferous tubules, efferent ducts, ductus deferens, epididymis, ejaculatory duct, urethra
- D. seminiferous tubules, epididymis, efferent ducts, ductus deferens, ejaculatory duct, urethra

19. All but one of the following muscles receive their motor innervation from the pharyngeal plexes via the vagus or cranial part of the accessory nerve.

- A. Superior constrictor
- B. Palatopharyngeus
- C. Salpingopharyngeus
- D. Middle constrictor
- E. Stylopharyngeus - glossopharyngeal

20. Which of the following lines the internal surfaces of the pharyngeal muscles, attaches the pharynx to the base of the skull and fills the gap in the pharyngeal wall above the superior constrictor?

- A
- ☒ A. Pharyngobasalar fascia
 - B. Buccopharyngeal fascia
 - C. Deep cervical fascia
 - D. Superficial cervical fascia
 - E. Sphenomandibular ligament

21. The superior laryngeal nerve and artery pass to the larynx at the level of junction of which of the following muscles?

- A
- ☒ A. Superior and middle pharyngeal constrictors
 - B. Middle and inferior pharyngeal constrictors
 - C. Superior constrictor and tensor veli palatini
 - D. Inferior constrictor and esophageal muscle
 - E. Superior constrictor and buccinator

22. The aryepiglottic fold or membrane (quadrangular) contains one of the following cartilages:

- C
- ~~A. Thyroid~~
 - ~~B. Cricoid~~
 - ☒ C. Arytenoid
 - ~~D. Corniculate~~
 - ~~E. 1st tracheal~~

23. Each vocal fold consists of all but one of the following:

- A
- ☒ A. Lateral cricoarythenoid muscle
 - B. Conus elasticus
 - C. Vocal ligament
 - D. Vocalis muscle
 - E. Thyroarytenoid muscle

24. The sole abductor of the vocal folds is:

- B
- A. Cricothyroid m.
 - ☒ B. Posterior crico-arytenoid m.
 - C. Lateral crico-arytenoid m.
 - D. Transverse arytenoid m.
 - E. Oblique arytenoid m.

25. The recurrent laryngeal nerve supplies all but one of the following muscles:

- A. Posterior crico-arytenoid
- B. Lateral crico-arytenoid
- C. Cricothyroid m. - *Ext Laryngeal*
- D. Transverse arytenoid
- E. Vocalis

26. Which of the following costal cartilages does not articulate directly with the body of the sternum?

- A. Second
- B. Fourth
- C. Fifth
- D. Eighth
- E. Third

27. A needle placed in the right 5th intercostal space about 6 inches from the paravertebral line will enter which of the following lung areas:

- A. Superior lobe
- B. Middle lobe
- C. Inferior lobe
- D. None of the lung lobes
- E. Horizontal fissure

Back - no middle lobe
Ant hit middle lobe

28. Which of the following does not contribute to the autonomic nerve plexus (prevertebral plexus) found on the posterior abdominal wall:

- A. Sympathetic trunk ✓
- B. Ilioinguinal nerve ✓
- C. Greater splanchnic nerve ✓
- D. Vagus nerve ✓

29. The ovarian artery is direct a branch of:

- A. The internal iliac
- B. The uterine artery
- C. The internal pudendal artery
- D. The aorta

30. All of the following are correct EXCEPT:

- ✓ A. The long axis of the uterus is usually bent anteriorly on the long axis of the vagina (anteverted).
- ✓ B. The cervical canal communicates with the cavity of the uterine body through the internal os and communicates with the vagina through the external os.
- ✓ C. Major supports of the uterus include the levator ani muscles and condensations of pelvic fascia which condense to form ligaments.
- ✓ D. The most distal portion of the uterine tube is known as the ampulla.

31. All of the following are true EXCEPT:

- A. The fascial layers of the anterior abdominal wall become continuous with the layers surrounding the penis and scrotum in the perineum.
- ✓ B. The prostate is a single, midline structure which secretes into the prostatic urethra via numerous ducts.
- C. The paired seminal vesicles lie between the posterior border of the urinary bladder and the anterior border of the rectum.
- D. The urethral crest and seminal colliculus are found in the membranous portion of the male urethra.

32. All these spaces have free drainage to the pelvis EXCEPT:

- A. Left lateral paracolic gutter
- ✓ B. Right medial paracolic gutter
- C. Left medial paracolic gutter
- ✓ D. Right lateral paracolic gutter
- E. None of the above

33. All of the following organs are normally in contact with the liver EXCEPT:

- A. Stomach
- ✓ B. Colon
- ✓ C. Pancreas
- ✓ D. Gallbladder
- ✓ E. Right kidney

34. All of the following veins are tributaries of the hepatic portal system **EXCEPT:**

- D*
- A. Cystic
 - ☒ B. Hepatic
 - C. Left gastric
 - D. Inferior pancreaticoduodenal *superior*
 - E. Superior rectal *inferior*

35. All of the following are associated with the large intestine **EXCEPT:**

- D*
- ☒ A. Marginal artery
 - ☒ B. Tenia coli
 - ☒ C. Haustra
 - ☒ D. Vasa recta - *Small Intest.*
 - ☒ E. Epiploic appendages

36. Organs which discharge secretions/contents into the duodenum include all **EXCEPT:**

- B*
- ☒ A. Stomach
 - ☒ B. Spleen
 - ☒ C. Gallbladder
 - ☒ D. Liver
 - ☒ E. Pancreas

37. All of the following are true concerning the muscles of the posterior abdominal wall **EXCEPT:**

- C*
- ☒ A. The psoas major is a powerful flexor of the thigh.
 - ☒ B. Their nervous innervation is from the lumbar plexus.
 - ☒ C. The quadratus lumborum serves to stabilize the pelvis by inserting into the pubis.
 - ☒ D. The diaphragm has an extensive origin from the sternum, ribs, and vertebrae.
 - ☒ E. The fascia covering the psoas major muscle is thickened superiorly to form the medial arcuate ligament.

K-TYPE QUESTIONS

- A if 1, 2, 3 are correct
- B if 1 and 3 are correct
- C if 2 and 4 are correct
- D if 4 is correct
- E if all are correct

38. Which of the following is/are true regarding the boundaries of the true pelvis?

- A
- 1. The pelvic brim may be referred to as the inlet of the pelvis.
 - 2. The lateral wall of the pelvis is lined by the obturator internus muscle.
 - 3. The perineum may be considered the outlet of the pelvis.
 - 4. The piriformis muscle forms the floor (inferior limit) of the pelvis.

39. Regarding the muscles of the pelvis:

- B
- 1. The tendinous arch is a fascial thickening located on the piriformis muscle.
 - 2. The pelvic diaphragm has origin from the tendinous arch.
 - 3. The puborectalis muscle is a part of the ischiococcygeus (coccygeus) muscle.
 - 4. The obturator internus muscle arises from the margin of the obturator foramen and leaves the pelvis through the lesser sciatic foramen.

40. Which of the following is (are) a function of the pelvic diaphragm?

- A
- 1. Resist increases in intra-abdominal pressure
 - 2. Support pelvic viscera
 - 3. Aid in the process of defecation
 - 4. Supports the perineal body

41. Select the correct statement(s):

- B
- 1. The pelvic plexus (inferior hypogastric plexus) is the main nerve supply to the reproductive organs.
 - 2. Iliolumbar and lateral sacral arteries are branches of the superior gluteal artery. ~~Int Iliac~~
 - 3. The internal pudendal artery serves as the main blood supply to the perineum.
 - 4. The hypogastric nerves are parasympathetic.

- A if 1, 2, 3 are correct
- B if 1 and 3 are correct
- C if 2 and 4 are correct
- D if 4 is correct
- E if all are correct

42. It is possible for an infection in the nasal cavity to spread to:

- E
- 1. middle ear
 - T2. nasopharynx
 - ✓3. paranasal sinuses
 - 4. anterior cranial fossa

43. Correct statements concerning the lateral wall of the nasal cavity include:

- B
- 1. the ethmoid bulla is produced by the middle ethmoidal air cells
 - F2. the nasolacrimal duct opens into the middle meatus *Inf meatus*
 - 3. the posterior ethmoidal air cells open into the superior meatus
 - ✓4. the superior and middle concha are part of the turbinate bone. *Inf concha*

44. Branches of the pterygopalatine ganglion include:

- A
- 1. pharyngeal
 - 2. greater palatine
 - 3. nasopalatine
 - F4. posterior superior alveolar.

45. Correct statement(s) concerning the pterygopalatine ganglion:

- B
- T1. it receives sensory fibers in route to the maxillary nerve
 - F2. it receives parasympathetic fibers from the deep petrosal nerve
 - 3. parasympathetic fibers synapse in it
 - ✓4. it receives sympathetic fibers from the greater petrosal nerve.

- A if 1, 2, 3 are correct
B if 1 and 3 are correct
C if 2 and 4 are correct
D if 4 is correct
E if all are correct

46. Correct statement(s) concerning the submandibular region:

- F* 1. preganglionic parasympathetic secretomotor fibers to the submandibular and sublingual glands are contained in the chorda tympani
2. the submandibular duct opens onto the sublingual caruncle
3. submandibular tori are overgrowths of bone
F 4. the submandibular ganglion is connected anatomically with the lingual nerve.

47. Which statement(s) concerning the derivatives of the aortic arches are true?

- C* 1. the first arch forms the stapedial artery
2. the third arch becomes the common carotid and proximal parts of the internal carotid arteries
3. the fourth arch becomes the pulmonary *6th* arteries
4. the right fourth arch becomes the right subclavian.

48. Correct statement(s) concerning the development of the atria:

- A* 1. the smooth part of the ^{*Rt.*} ~~left~~ atrium is derived from the incorporation of the right horn of the sinus venosus
2. the remnants of the primitive atrium include the two auricles and the rough part of the right atrium
3. the remnant of septum primum forms the floor of the fossa ovalis
4. the remnants of the right valve of the sinus venosus include the valve of the inferior vena cava and the valve of the coronary sinus.

- A if 1, 2, 3 are correct
- B if 1 and 3 are correct
- ~~C~~ if 2 and 4 are correct
- ~~D~~ if 4 is correct
- E if all are correct

49. Correct statement(s) concerning congenital heart defects:

- 1. ventricular septal defect is the most common congenital heart anomaly
- ? F 2. patent ductus arteriosus is relatively common in premature infants
- B 13. transposition of the great arteries is the most common single cause of cyanosis in the newborn period
- F 4. the time which most congenital heart defects develop is during the 8th embryonic week. *3-4 weeks*

SELECT THE CORRECT STATEMENT

50. Select the correct statement.

- ~~A~~ The femoral nerve is from L4 and 5, S1 and 2 of the lumbar plexus. *L2,3,4*
- ~~B~~ Inferior phrenic and lumbar arteries arise as branches from the common iliac arteries. *Aorta*
- ~~C~~ The genitofemoral nerve is a branch of the sacral plexus. *lumbar*
- D The kidney (a retroperitoneal organ) is surrounded by fat which serves as a means of protection.
- E Veins that drain the posterior abdominal wall enter the portal circulation.

51. Select the correct statement.

- ~~A~~ The infundibulum of the uterine tube provides a source of support for the ovary.
- B The round ligament of the uterus suspends the uterus from the lateral wall of the body.
- C The ovarian ligament (round ligament of the ovary) extends from the lateral wall of the uterus to the medial side of the ovary.
- ~~D~~ The broad ligament is formed by pelvic visceral fascia.

52. Select the correct statement:

- E
- ☒ A. septum secundum fuses with the endocardial cushions
 - ☐ B. foramen secundum develops as perforations in septum primum
 - ☐ C. septum secundum develops to the left of septum primum
 - ☐ D. a communication between right and left atria is maintained throughout fetal life
 - ☐ E. B + D are correct.

53. Select the correct statement:

- B
- ☒ A. The inguinal canal is located on the posterior body wall adjacent to the kidneys.
 - ☐ B. The ejaculatory duct is formed by the union of the ductus deferens and the duct of the seminal vesicle.
 - ☒ C. The scrotum contains the testis, epididymis, and bulbourethral glands.
 - ☒ D. The ductus deferens is located only in the pelvis.

54. Select the correct statement.

- A
- ☐ A. The superficial perineal space lodges the roots of the penis or clitoris and their associated muscles.
 - ☒ B. The superficial perineal space is comprised between the inferior and superior fasciae of the urogenital diaphragm.
 - ☒ C. The male perineal space is occupied by the urinary bladder and seminal vesicle.
 - ☒ D. The female perineal space is occupied by the neck of the uterus.
 - ☒ E. The perineal body is located at the level of the body of the 3rd sacral vertebra.

55. Select the correct statement.

- A
- ☐ A. The perineum, defined anatomically, is the entire outlet of the pelvis.
 - ☒ B. The perineum comprises only the pelvic diaphragm.
 - ☒ C. The male perineum and the female perineum differ because the rectal muscles are fused with the urethral bundles in the male.
 - ☒ D. The ischial symphysis is the median insertion of the perineal body.
 - ☒ E. The puborectal muscle is the most lateral bundle of the levator ani.

56. Select the correct statement.

- A. The tunica dartos of the scrotum is directly continuous with the subcutaneous tissue of the abdominal wall.
- ☒ B. The ilioinguinal nerve traverses the inguinal canal to the deep inguinal ring where it gives the posterior scrotal nerves.
- ☒ C. The iliohypogastric nerve, also called the subcostal nerve, is an ovarian nerve.
- ☒ D. The inferior epigastric artery is a terminal branch of the internal thoracic artery and descends in the rectus sheath posterior to the rectus abdominis muscle.
- E. The pampiniform plexus is made up of nerves which supply the cervix.

57. Select the correct statement.

- ☒ A. The urogenital triangle is located posterior to the bischial line.
- ☒ B. The anal triangle is located anterior to the bi-spinous line.
- C. The posterolateral limits of the perineum are the sacrotuberous ligaments.
- ☒ D. The anterior angle of the diamond-shaped perineal space is the vagina or the dartos.
- ☒ E. The ischiorectal space is located above the levator ani.

58. Which of the following statements regarding structures in the intercostal spaces is correct?

- ☒ A. The intercostal nerve travels forward in an intercostal space between the external and internal intercostal muscles.
- ☒ B. The anterior intercostal arteries of the upper six intercostal spaces are branches of the internal thoracic artery.
- C. The lower five intercostal nerves only supply sensory innervation to the skin of the lateral thoracic wall.
- ☒ D. The intercostal blood vessels and nerves are positioned in the order of vein, nerve and artery from superior to inferior in a subcostal groove.
- ☒ E. The anterior intercostal membrane is associated with the internal intercostal muscle.

59. Which of the following statements regarding the trachea is true?

- ☒ A. It lies posterior to the esophagus in the superior mediastinum.
- ☒ B. The left primary bronchus is more vertical than the right primary bronchus.
- ☒ C. The arch of the aorta lies on its posterior and right side in the superior mediastinum.
- D. Its bifurcation into primary bronchi is about at the level of the sternal angle.
- ☒ E. The carina is where the cricoid cartilage articulates with the first tracheal cartilage ring.

60. Select the INCORRECT statement:

- A. The right phrenic nerve passes anterior to the root of the lung.
- ☒ B. The azygos vein arches forward over the superior margin of the root of the lung.
- C. The right pulmonary artery lies anterior to the primary bronchus in the lung root.
- D. The right vagus nerve passes posterior to the lung root.
- E. The left pulmonary artery lies posterior to the primary bronchus in the lung root.

61. Select the INCORRECT answer regarding the sternocostal (anterior) surface of the heart:

- A. Is formed by the right atrium.
- B. Is formed by the right ventricle.
- C. Is formed by the left ventricle.
- ☒ D. Is formed by the left atrium.
- E. Is related to the anterior interventricular artery.

62. Which of the following statements related to the pleura is INCORRECT?

- ☒ A. The potential space between visceral and parietal pleura is the pleural cavity.
- B. The costodiaphragmatic recess lies between layers of parietal pleura.
- C. Below the root of the lung, the mediastinal pleura creates a double layer termed the pulmonary ligament.
- ☒ D. The cupola of the pleura (cervical pleura) is related to the hilum of the lung.
- ☒ E. In the living adult, the two anterior borders of the pleura nearly meet behind the upper part of the sternum.

63. All but one of the following is true of the heart and great vessels:

- C
- A. Base formed by the ventricles
 - T B. Apex in the 5th intercostal space, left side
 - C. Pulmonary ostium under 2nd left interspace
 - D. Aortic ostium largely lies substernally
 - T E. The opening into the ascending aorta is guarded by a semilunar valve.

64. All but one are correct in relation to thoracic duct:

- A
- A. Receives all lymphatics below diaphragm.
 - T B. At its origin is a dilated portion, the cisterna chyli.
 - C. Extends from 2nd lumbar vertebra to junction of the right internal jugular vein with right subclavian vein.
 - D. Does not generally drain right side of head and neck.
 - E. Receives tributaries from left side of chest.

Choose the embryonic structure which develops into the following adult derivatives:

- B 65. ligamentum teres hepatis A. umbilical artery
- D 66. coronary sinus? B. umbilical vein
- E 67. ligamentum venosum C. right horn of sinus venosus
- D. left horn of sinus venosus
- E. ductus venosus

Answer the following questions using the key as given (questions 68-71):

- A. If 1, 2 and 3 are correct
- B. If 1 and 3 are correct
- C. If 2 and 4 are correct
- D. If only 4 is correct
- E. If all are correct

68. Among the contents of the posterior mediastinum are:

- A
- 1. Esophagus
 - 2. Phrenic nerves
 - 3. Splanchnic nerves
 - 4. Sympathetic chains.

- A. If 1, 2 and 3 are correct
- B. If 1 and 3 are correct
- C. If 2 and 4 are correct
- D. If only 4 is correct
- E. If all are correct

69. Concerning the right atrium of the heart:

- 1. The superior vena cava is guarded by a valve.
- 2. Fossa ovalis is found on its medial wall.
- 3. Opening of the coronary sinus has no valve.
- 4. Its atrial appendage contains muscoli pectinati.

70. Which of the following is related to the right ventricle:

- 1. Moderator band
- 2. Trabeculae carneae
- 3. Infundibulum of the pulmonary artery
- 4. Crista and sulcus terminalis.

71. Bronchopulmonary segments are related to:

- 1. Primary bronchi
- 2. Secondary bronchi
- 3. Bronchioles
- 4. Tertiary bronchi.

In each of the following (questions 72 thru 81) answer:

- A. if (1) is correct only
- B. if (2) is correct only
- C. if both (1) and (2) are correct
- D. if neither (1) nor (2) is correct.

72. (1) The ligamentum arteriosum runs between the left pulmonary artery and aorta.
 (2) Stab wounds of the neck immediately above the medial one-third of the clavicle may perforate the pleural cavity.

73. (1) The right coronary artery gives off the anterior interventricular branch, which supplies the right and left ventricle.
 (2) The anterior cardiac vein opens into the left atrium.

- A. if (1) is correct only
- B. if (2) is correct only
- C. if both (1) and (2) are correct
- D. if neither (1) nor (2) is correct.

74. (1) With a patient in the standing position, fluid in the left pleural cavity tends to gravitate down to the costodiaphragmatic recess.
 (2) All intercostal nerves are derived from anterior rami of thoracic spinal nerves.

75. (1) The deep cardiac plexus is located in the concavity of the arch of the aorta.
 (2) The cardiac plexi have both sympathetic nerves from the sympathetic chain ganglia and parasympathetic nerves from the vagus nerves contributing to their formation.

76. (1) The transverse sinus of the pericardium lies between the pulmonary trunk and aorta superoanteriorly and the atria and pulmonary veins inferoposteriorly.
 (2) The oblique pericardial sinus lies in the concavity behind the serous pericardium covering the base of the heart.

77. (1) The right border of the heart is formed by the base of the superior vena cava and the right atrium and extends from the 2nd costal cartilage to the 6th.
 (2) Chordae tendinae and papillary muscles are significant features associated with the semilunar valves.

78. (1) The sensory supply to the mucous membrane of the larynx below the level of the vocal cords is by way of the superior laryngeal nerve (X).
 (2) All the intrinsic muscles of the larynx are innervated by the inferior laryngeal nerve.

79. (1) The valleculae are created by mucous membrane covering the glossoepiglottic folds.
 (2) The vestibule of the larynx extends from the laryngeal inlet to the vestibular folds.

- A. if (1) is correct only
- B. if (2) is correct only
- C. if both (1) and (2) are correct
- D. if neither (1) nor (2) is correct.

80. (1) The lungs and parietal pleura have a common surface marking with no deviations or separations of the latter.
- (2) The middle constrictor of the pharynx is associated with thyroid and cricoid cartilages and blends inferiorly with esophageal muscle.
81. (1) The splanchnic thoracic nerves are preganglionic parasympathetic fibers passing into the abdominal cavity via thorax.
- (2) One of the major anterior relations of the esophagus in the posterior mediastinum is the left atrium of the heart.

Questions from 82 through 86 choose best answer from list at right. A choice may be used once, more than once or not at all.

- | | |
|-----------------------------------|---|
| 82. Deep inguinal ring | A. Fascia transversalis |
| 83. Superficial inguinal ring | B. Aponeurosis external oblique |
| 84. Inferior wall inguinal canal | C. Internal oblique-transversus muscles |
| 85. Anterior wall inguinal canal | D. Inguinal ligament |
| 86. Posterior wall inguinal canal | E. Scarpa's fascia |

Questions from 87 through 92 match the vertebral level with the structure(s) located at that plane. A choice may be used once, more than once or not at all.

- | | |
|--|------------------------|
| 87. Cardiac orifice of stomach | A. L ₁ |
| 88. Transverse (3rd part) of Duodenum | B. L ₂ |
| 89. Superior Mesenteric artery (root of) | C. L ₃ |
| 90. Left renal pelvis | D. L ₄ |
| 91. Superior (1st part) of duodenum | E. None of above (A-D) |
| 92. Aortic bifurcation | |

Questions from 93 through 98. Match the following anatomical features according to whether they are normally found in:

- | | |
|---|-------------------------|
| A 93. Everted ischial tuberosities | A. the female only |
| B 94. Deep pelvic cavity with narrow sacrum | B. the male only |
| | C. both male and female |
| C 95. Superior vesical artery | |
| C 96. Pubococcygeus muscle | |

Questions from 97 through 99. Match the following anatomical structures with the diaphragmatic openings through which they pass to enter the posterior abdominal wall.

- | | |
|-----------------------------------|-----------------------|
| ? A 97. Thoracic duct | A. aortic opening |
| C 98. Right and left vagus nerves | B. caval opening |
| B 99. Inferior vena cava | C. esophageal opening |

USE THE FOLLOWING CHOICES TO ANSWER QUESTIONS 100 TO 109.

- A. Endoderm
B. Mesoderm
C. Ectoderm
D. Endoderm and Mesoderm
E. Endoderm and Ectoderm

- ? 100. Epithelium of adult urinary bladder A
? 101. Epithelium of adult ureter A
A 102. Secretory cells of pars distalis of hypophysis cerebri B
? 103. Cells lining blood vessels (endothelial cells) A
E 104. Cloacal membrane
A 105. Alveolar epithelial cells (Pneumocytes type I)
A 106. Secretory cells of suprarenal medulla
B 107. Smooth muscle cells of ileum
A 108. Secretory cells of pancreatic islets (of Langerhans)
C 109. Follicular (thyroxin producing) cells of thyroid gland

SELECT THE SINGLE BEST ANSWER

110. The uriniferous tubule is composed of tissue derived from

- B
A. Mesonephric tubules
B. Ureteric bud
C. Urogenital sinus
D. A and B above are correct
E. A, B, and C above are correct

111. Persists in the absence of functioning embryonic/fetal testes

- A*
- ☒ A. Paramesonephric ducts
 - ☐ B. Initial diverticulum to develop from mesonephric duct
 - ☐ C. Second diverticulum to develop from mesonephric duct
 - ☐ D. A and B above are correct
 - ☐ E. A, B, and C above are correct

112. The most common form of tracheoesophageal fistula

- B*
- ☐ A. is found at the level of the third tracheal ring.
 - ☒ B. demonstrates a communication between the inferior portion of the esophagus and the distal trachea.
 - ☐ C. does not allow air to enter the stomach.
 - ☐ D. A and B above are correct
 - ☐ E. A, B, and C above are correct

113. The thoracoabdominal diaphragm contains tissue derived from

- C*
- ☒ A. the septum transversum
 - ☐ B. lateral body wall
 - ☐ C. dorsal mesentery
 - ☐ D. A and B above are correct
 - ☐ E. A, B, and C above are correct

114. The pars intermedia of the hypophysis cerebri is

- D*
- ☐ A. a part of the posterior lobe.
 - ☒ B. a portion of the adenohypophysis.
 - ☐ C. derived from pharyngeal endoderm.
 - ☐ D. A and B above are correct.
 - ☐ E. A, B, and C above are correct

115. The developmental defect that most commonly produces a posterolateral diaphragmatic hernia is usually associated with

- A*
- ☐ A. failure to close the pleuroperitoneal membrane
 - ☒ B. defective development of the right crus of the diaphragm
 - ☐ C. incomplete development of the central tendon of the diaphragm.
 - ☐ D. A and B above are correct
 - ☐ E. A, B, and C above are correct

116. The major pancreatic duct is derived from the

- ☒ A. dorsal pancreatic rudiment
☐ B. hepatic diverticulum
☒ C. endoderm of the midgut
☐ D. A and B above are correct
☒ E. A, B, and C above are correct

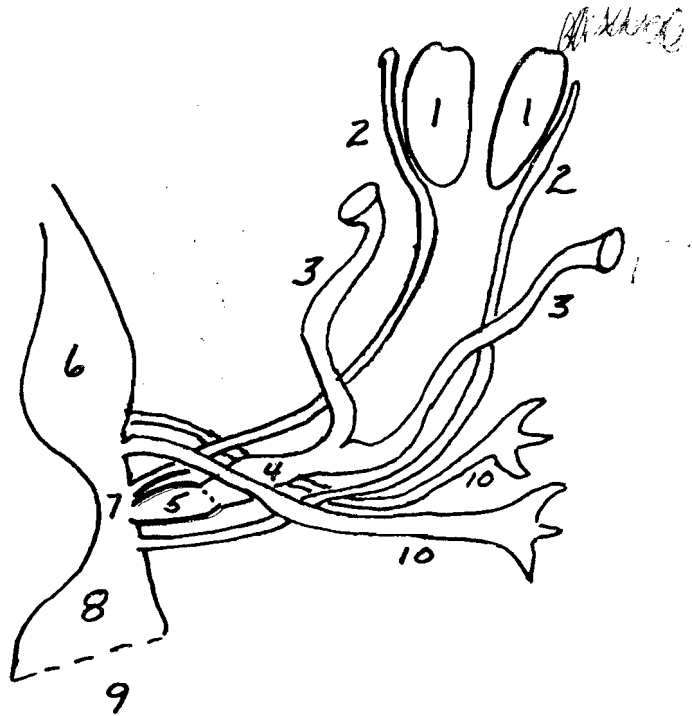
QUESTIONS 117 TO 118

117. Persists as functional tissue/organs in both adult male and female

- ☒ A. 1, 2, 6, 10
☒ B. 1, 3, 4, 7
☐ C. 6, 7, 10
☒ D. 2, 5, 6
☐ E. 3, 4, 10

118. Contributes to hymen

- ☒ A. 4 only
☐ B. 5 only
☐ C. 4 and 5
☐ D. 5 and 7
☐ E. 8 and 9



QUESTIONS 119 TO 123

119. Innervated by the vagus nerve

- A. 1
B. 1, 2
C. 1, 2, 3
D. 1, 2, 3, 4
E. 1, 2, 3, 4, 5

E

120. Supplied by the celiac artery

- A. 2
B. 3
C. 2, 3
D. 2, 3, 4
E. 3, 4, 5

C

121. In contact with dorsal mesentery and septum transversum

- A. 1
B. 2
C. 2, 3
D. 1, 2, 3
E. 3, 4, 5

D R

122. Innervated by pelvis splanchnic nerves

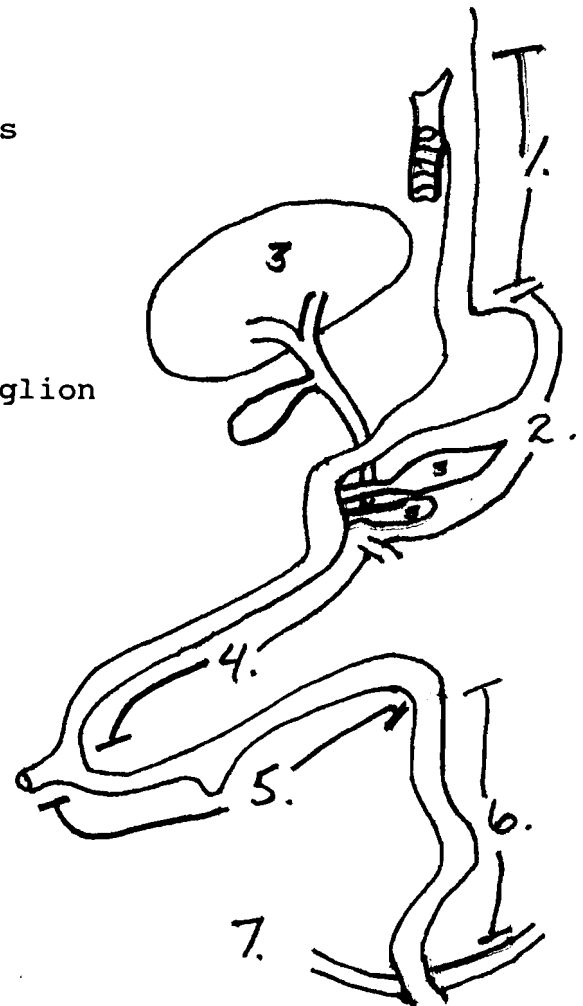
- A. 5
B. 6
C. 7
D. 5, 6
E. 5, 6, 7

2 E

123. Innervated by superior mesenteric ganglion

- A. 2, 3
B. 4, 5
C. 2, 3, 4
D. 4, 5, 6
E. 3, 4, 5, 6

B



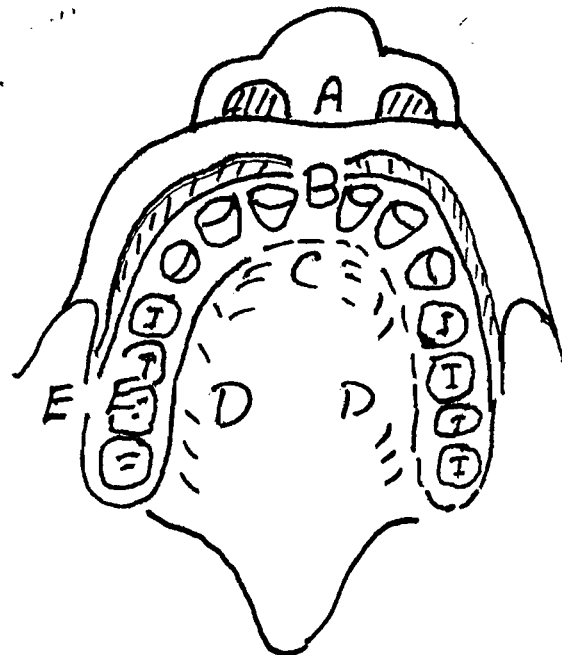
QUESTIONS 124 TO 125

124. Derived from medial nasal processes of frontonasal eminence.

- A. A only
 B. A and B
~~C. A, B, and C~~
~~D. D only~~
~~E. D and E only~~

125. Derived from the lateral palatine processes of the maxillary eminence

- A. B only
 B. C only
 C. D only
 D. C and D
 E. D and E



QUESTIONS 126 TO 128

126. General sensory innervation by trigeminal nerve (*lingual*)

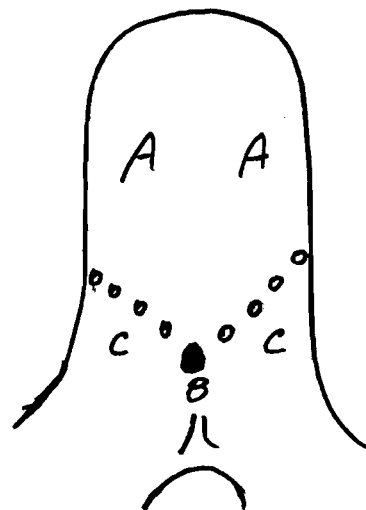
- A. A only
 B. C only
 C. A and C
 D. None of the above

127. Epithelium derived from endoderm

- A. A only
 B. C only
 C. A and C
 D. None of the above

128. Innervated by the hypoglossal nerve

- A. A only
 B. C only
 C. A and C
 D. None of the above



129. The lumen of the processus vaginalis in the male

- A. contains the testis and spermatic cord.
- B. is continuous with the peritoneal cavity.
- C. normally lies posterior (deep) to the gubernaculum.
- D. A and B above are correct
- E. A, B, and C above are correct

130. The developmental feature(s) that assist(s) in the identification of the embryonic testis is (are)

- A. presence of primordial germ cells
- B. presence of mesenchymally derived cells
- C. presence of thick connective tissue tunica albuginea
- D. A and B above are correct
- E. A, B, and C above are correct

65. The blood-testis barrier

- A. is formed by the occluding junctions between adjacent Sertoli cells.
- B. prevents exposure of the immune system to spermatocytes.
- C. prevents exposure of spermatogonia to antibodies against spermatozoan plasmalemma.
- D. A and B are correct
- E. A, B, and C are correct

66. Follicular (granulosa) cells of the ovary

- A. have direct contact with the primary oocyte.
- B. are capable of producing estrogens and progesterone.
- C. degenerate during atresia.
- D. A and B are correct
- E. A, B, and C are correct

67. Blood-borne androgens are important in the development and maintenance of

- A. spermatocytes.
- B. prostatic epithelium.
- C. spermatogonia.
- D. A and B are correct
- E. A, B, and C are correct

68. Movement of spermatozoa in the duct of the epididymis is predominately caused by

- A. smooth muscle.
- B. ciliary action.
- C. flagellar action.
- D. A and B are correct
- E. A, B, and C are correct

69. Prostatic carcinoma is most likely to develop in the

- A. urethral mucosal prostatic glands.
- B. prostatic submucosal prostatic glands.
- C. main prostatic glands.
- D. A and B are correct
- E. A, B, and C are correct

70. At the time of ovulation, the endometrium will most likely be in the

- A. menstrual phase.
- B. proliferative phase.
- C. secretory phase.
- D. A and B are correct
- E. A, B, and C are correct

71. The ovarian cell(s) that is(are) most equivalent to the Sertoli cells of the testis is(are)
- A. follicular (granulosa) cells.
 - B. theca interna cells.
 - C. theca externa cells (stromal cells).
 - D. A and B are correct
 - E. A, B, and C are correct
72. Cervical carcinoma is likely to be initiated at or near the
- A. transition between the cervical mucosa and endometrium.
 - B. secretory cells of the cervical (palmate) glands.
 - C. transition between the cervical mucosa and vaginal mucosa.
 - D. A and B are correct
 - E. A, B, and C are correct
73. Glycerophosphocholine is produced by the epithelium of the
- A. seminiferous tubule.
 - B. rete testis.
 - C. duct of epididymis.
 - D. A and B are correct
 - E. A, B, and C are correct
74. A vasectomy usually
- A. blocks the emission of testicular products produced within the seminiferous tubule.
 - B. limits the ability to ejaculate glandular secretions.
 - C. decreases the ability to produce an erection.
 - D. A and B are correct
 - E. A, B, and C are correct
75. Estrogen produced by the ovary is responsible for the
- A. proliferation of the endometrium after menstruation.
 - B. proliferation of ductal epithelium during puberty.
 - C. proliferation of secretory alveolar epithelium during pregnancy.
 - D. A and B are correct
 - E. A, B, and C are correct
76. The seminal vesicle normally
- A. produces the majority of seminal fluid released at ejaculation.
 - B. decreases the amount of fluid produced as testosterone levels decline with normal aging.
 - C. produces fluids necessary to capacitate spermatozoan within ejaculated seminal fluids.
 - D. A and B are correct
 - E. A, B, and C are correct

QUESTIONS 77 TO 81

For each of the next five questions, match the structures labeled A-E to the structures with which it has a direct physical relationship.

- | | | | |
|--------------|---------------------|----|--------------------|
| 77. <u>E</u> | Basilar membrane | A. | oval window |
| 78. <u>B</u> | tunnel of corti | B. | pillar cells |
| 79. <u>D</u> | auditory hair cells | C. | tympanic membrane |
| 80. <u>C</u> | malleus | D. | tectorial membrane |
| 81. <u>A</u> | stapes | E. | Organ of Corti |

QUESTIONS 82 TO 86

Indicate the proper position of reserve (repopulating) epithelial cells for each of the following structures

- A. Predominately at neck of tubular glandular structure
- B. Predominately at base of tubular glandular structure
- C. Uniformly distributed along the length and thickness of tubular glandular structure
- D. None of the above

- 82. Small intestinal mucosa
- 83. Seminiferous tubule
- 84. Endometrium
- 85. C Gastric mucosa
- 86. Large intestinal mucosa

QUESTIONS 87 TO 91

Answer A if the smooth muscle of the inner layer of organ's external muscular wall appears to be oriented circularly (transversely) relative to major axis of organ

Answer B if the smooth muscle of the inner layer of organ's external muscular wall appears to be oriented longitudinally to major axis of organ

Answer C if Neither of the above

- 87. A Ileum
- 88. A Appendix
- 89. B Lower ureter
- B 90. C Ductus deferens
- 91. A Upper esophagus

QUESTIONS 92 TO 95

MARK A IF TRUE; MARK B IF FALSE

92. The blood-brain barrier is a physiological result of the continuous capillaries of the brain having few, if any transport vesicles, no fenestrations, and numerous desmosomes.
- ⊥ 93. The thickest and most developed layer of a large vein is the tunica adventitia, which contains abundant packets of smooth muscle and vasa vasorum.
- ⊥ 94. A hallmark of an elastic artery is its clearly observable internal elastic lamina with numerous fenestrations.
- ⊥ 95. Fenestrated capillaries without diaphragms are found only in the renal glomerulus.

QUESTIONS 96 TO 100

For each endocrine activity select the letter of the specific cell type which causes the action:

- A. Principal cells of thyroid
- B. Acidophils of the pars distalis
- C. Zona glomerulosa cells
- D. Zona fasciculata cells
- E. Parafollicular cells of thyroid

96. A Site of oxidation of iodide
97. C Aldosterone production
98. B Growth hormone production
99. D Cortisol production
100. E Calcitonin production

72

65. Which of the following is/are formed by cells originating from oral epithelium of ectodermal origin?

- crane*
- A. Dentin
 - B. Cementum
 - ☒ C. Enamel
 - D. A and B above are correct.
 - E. A, B and C above are correct.

66. Gastric parietal cells are involved in the production of...

- D*
- A. intrinsic factor related to vitamin B12. ✓
 - B. hydrochloric acid. ✓
 - C. bicarbonate molecules.
 - ☒ D. A and B are correct.
 - E. A, B, and C are correct.

2 P

67. To combat ovarian carcinoma, an individual has been intravenously given an anti-mitotic chemotherapeutic agent that retains effective concentrations for two days. At what time interval, postinjection, would changes in gastrointestinal mucosal cell populations would be most observable?

- ☒ A. 2 to 7 minutes
- B. 2 to 7 hours
- C. 2 to 7 day
- D. 2 to 7 weeks
- E. 2 to 7 months

68. Lymphatic blockage within the small intestine would likely cause changes in the transportation of which of the following absorbed materials?

- B*
- A. Carbohydrates (glucose)
 - ☒ B. Lipids (chylomicrons)
 - C. Proteins (amino acids)
 - D. A and B are correct.
 - E. A, B, and C are correct.

69. Which of the following is/are related most directly to the exocrine function of the liver.

- + B*
- A. Hepatic acinus
 - ☒ B. Hepatic portal lobule
 - C. Hepatic lobule (classic)
 - D. A and B are correct
 - E. A, B, and C are correct

bile duct

70. Which of the following is/are related most directly to the endocrine function of the liver.
- A. Hepatic acinus
 - B. Hepatic portal lobule
 - ☒ C. Hepatic lobule (classic)
 - D. A and B are correct.
 - E. None of the above are correct.
71. In a person who is digesting and starting to absorb their breakfast, glucose is most likely to be found in hepatocytes...
- ☒ A. at the periphery of the hepatic acinus.
 - ☒ B. at the center of the hepatic portal lobule.
 - ☒ C. at the center of the classic hepatic lobule.
 - D. A and B are correct.
 - E. None of the above are correct.
72. When compared to other organs, which is a function performed only by the Kupffer cells of liver?
- A. Phagocytosis of foreign particulate matter
 - ☒ B. Phagocytosis of old or damaged red blood cells
 - C. Sequestration of bile pigments
 - D. A and B are correct.
 - E. None of the above are correct.
73. Acute obstruction of the duodenal end of the common bile duct may ultimately cause bile to escape into the general circulation. The point of escape is most likely between...
- A. the cells of the mucus membrane of the bile duct.
 - B. the cells of the mucus membrane of the gall bladder.
 - ☒ C. the cells of the hepatic plates.
 - D. A and B are correct.
 - E. None of the above are correct.
74. Which is/are normally found in the parotid salivary gland?
- ☒ A. Striated ducts with columnar epithelium
 - ☒ B. Centroacinar cells
 - ☒ C. Both A and B
 - D. Neither A nor B

75. Epithelia found on the lip and the anal canal include....

- ☒ A. stratified squamous keratinizing epithelium.
☒ B. stratified squamous non-keratinizing epithelium.
D ☒ C. simple columnar epithelium.
☒ D. A and B are correct.
E. A, B, and C are correct.

76. Loss of enamel from the tooth may occur rapidly in some individuals because of...

- ☒ A. exposure to hydrochloric acid during repeated vomiting (bulimia).
☒ B. exposure to bacterially produced acids trapped in material stuck between teeth.
E ☒ C. lower than normal concentrations of calcium compounds in hydroxyapatite crystals due to poor maternal nutrition.
☒ D. A and B are correct.
E. A, B, and C are correct.

77. In a woman with a regular 30 day ovarian-uterine cycle, at day 14 of her ovarian-uterine cycle, the endometrium should be in the....

- C ☒ A. menstrual phase.
☒ B. premenstrual phase.
☒ C. proliferative phase. 7-14
D. secretory phase.
E. None of the above.

78. Steroid producing cells include...

- ☒ A. Interstitial cells of Leydig.
☒ B. Granulosa lutein cells.
E ☒ C. Theca interna cells.
D. A and B above are correct.
☒ E. A, B, and C above are correct.

79. Which of the following normally contains a secondary oocyte?

- ☒ A. Large secondary follicle prior to undergoing atresia.
☒ B. Small secondary follicle.
E ☒ C. Primary follicle.
D. A and B are correct.
☒ E. None of the above are correct.

80. Dysplastic (precancerous) changes in epithelial cells which lead to carcinoma are usually found...
- ☒ A. at the squamocolumnar junction of the internal cervical os of uterus.
 - B. within secretory cells of the mucosal and submucosal glands of prostate.
 - ☒ C. Both A and B are correct.
 - D. Neither A nor B is correct.
81. The concentrations of testosterone in the abluminal compartment of the seminiferous tubule are created and maintained by...
- A. the blood-testis barrier of Sertoli cells. ✓
 - B. the presence of androgen binding protein. ✓
 - C. intimate juxtaposition of interstitial cells of Leydig and seminiferous tubules.
 - D. A and B above are correct.
 - ☒ E. A, B, and C above are correct.
82. The storage site for spermatozoa is ...
- A. seminiferous tubule.
 - B. ductus deferens.
 - ☒ C. seminal vesicle.
 - D. rete testes.
 - ☒ E. None of the above.

MATCHING: An answer may be used once, more than once or not at all.

Match the cell(s) (A - D) with the best matching description (Question #s 83 - 87).

A = Granulosa cells
B = Sertoli cells
C = Both A and B are correct.
D = Neither A nor B is correct.

- C 83. C In contact with reproductive cell
C 84. B Produce steroid binding protein
B 85. B Phagocytic in function
C 86. A Endocrine in function
D 87. B Normally in direct contact with capillary endothelium

Match the structure(s) (A - D) with the best matching description (question #s 88 - 91).

A = Uterine tube
B = Ductus deferens - transitional ep.
C = Both A and B are correct.
D = Neither A nor B is correct.

- 88. A A Ciliated cells abundant in mucosa
89. A A Secretory cells interposed between ciliated cells
90. A C ^{B + A} Transports motile sperm capable of fertilizing oocyte
+ 91. A A Reproductive cells may spend one or two days in lumen

COMPARISONS:

When comparing statement A to B

Use the following key to answer question #s 92 - 100.

A = if A is greater than B

B = if B is greater than A

C = if A and B are approximately equal

- A 92. A. Number of villi in small intestine
B. Number of villi in large intestine
- E 93. A. Number of ameloblasts in your mouth/jaws
B. Number of odontoblasts in your mouth/jaws
94. A. Total mucosal surface area in six inch length of duodenum with one inch diameter
B. Total mucosal surface area in six inch length of ileum with one inch diameter ;
95. A. Volume of fluid passing into the lumen of the rete testis
C B. Volume of fluid passing into the lumen of the efferent ductules
96. A. Area of an active gastric parietal cell exposed to lumen
C B. Area of an active gastric chief cell exposed to lumen
97. A. Length of descending limb of loop of Henle of a juxtacapsular nephron
B B. Length of collecting duct system directly involved in draining a juxtacapsular nephron
98. A. Number of goblet cells in a square centimeter of jejunal mucosa
B B. Number of goblet cells in a square centimeter of descending colon mucosa
99. A. Number of cells and/or substances within the space of Disse
C B. Number of cells and/or substances within the hepatic sinusoid
100. A. Number of nerve cell bodies in myenteric plexus of Auerbach
C B. Number of nerve cell bodies in submucosal plexus of Meissner

Id #:
Name:

Class:
Time:

Course #: MICRO95

Test Key:	CEDCEABBBA	AABBABAEAC	DDEABDECCC	ADABECABED	DABBEBCDCE
Items 1-50:	1234567890	1234567890	1234567890	1234567890	1234567890
Student's Answers:	*****AA**	***A*A***	*****	*****	*****

Test Key:	DEBBCCCEAD	ECBACECEBA	BECADECEED	CECCBCDAAA	AABAACBDBA
Items 51-100:	1234567890	1234567890	1234567890	1234567890	1234567890
Student's Answers:	*****DC*	*E*****A***	*B*****B	E**B*AB**C	***B*C**CC

BONUSED QUESTIONS = 80,81,86